What is Claimed Is:

1. A pattern-matching method comprising, from a data set:
generating vectors from a plurality of partitions of the data set;
reducing each generated vector to a lower dimensional vector;
for each lower dimensional vector, summing distances between the lower dimensional vector and remaining lower dimensional vectors; and
selecting the generated vector corresponding to the lower dimensional vector having a lowest summed distance as representative of the data set.

2. The method of Claim 1, further comprising:
outputting the generated vector as the representative of the data set.

3. The method of Claim 2, the outputting comprising:
outputting the generated vector to a graphical display.

4. The method of Claim 2, the outputting comprising:
outputting the generated vector to a storage device.

5. The method of Claim 2, the outputting comprising:
outputting the generated vector to a transmitter.

6. The method of Claim 1, wherein the reducing comprises:
choosing a dimension of the lower dimensional vectors;
generating a plurality of random normalized vectors, the number of the random normalized vectors equaling the dimension of the lower dimensional vectors; and
calculating a dot product between each of the generated vectors and each of the random normalized vectors to produce the lower dimensional vectors.

7. The method of Claim 1, wherein the reducing comprises:

choosing a dimension of the lower dimensional vectors;

generating a plurality of random normalized vectors, the number of the random normalized vectors equaling the dimension of the lower dimensional vectors; and

calculating a polynomial convolution between each of the generated vectors and each of the random normalized vectors to produce the lower dimensional vectors.

8. The method of Claim 7, further comprising:

generating another plurality of random normalized vectors, the number of the another random normalized vectors equaling the dimension of the lower dimensional vectors; and

calculating a polynomial convolution between each of the generated vectors and each of the another random normalized vectors to produce second lower dimensional vectors.

9. The method of Claim 8, further comprising:

adding each lower dimensional vector with the corresponding second lower dimensional vector to produce third lower dimensional vectors, the third lower dimensional vectors representing fourth vectors with higher dimensionality than the generated vectors.

10. The method of Claim 1, wherein the selecting comprises:

identifying a dimension of the selected generated vector as a relaxed period.

11. The method of Claim 1, wherein the selecting comprises:

identifying the selected generated vector as an average trend.

12. A pattern-matching method comprising, for a data set:

generating vectors from a plurality of partitions of the data set;

reducing each generated vector to a first lower dimensional vector and a second lower dimensional vector;

adding each first lower dimensional vector and the corresponding second lower dimensional vector to produce third lower dimensional vectors, wherein the third lower dimensional vectors represent fourth vectors with higher dimensionality than the generated vectors;

for each third lower dimensional vector, summing distances between the third lower dimensional vector and remaining third lower dimensional vectors; and

selecting one of the fourth vectors corresponding to the third lower dimensional vector having a lowest summed distance as representative of the data set.

13. The method of Claim 12, further comprising:

outputting the one of the fourth vectors as the representative of the data set.

14. The method of Claim 12, further comprising:

choosing a dimension of the first and second lower dimensional vectors;

generating a plurality of random normalized vectors, the number of the random normalized vectors equaling the dimension of the first and second lower dimensional vectors;

calculating a polynomial convolution between each of the generated vectors and each of the random normalized vectors to produce the first lower dimensional vectors;

generating another plurality of random normalized vectors, the number of the another random normalized vectors equaling the dimension of the first and second lower dimensional vectors; and

calculating a polynomial convolution between each of the generated vectors and each of the another random normalized vectors to produce the second lower dimensional vectors.

15. A pattern-matching method comprising, from a data set:

generating vectors from a plurality of partitions of the data set;

reducing each generated vector to a first lower dimensional vector;

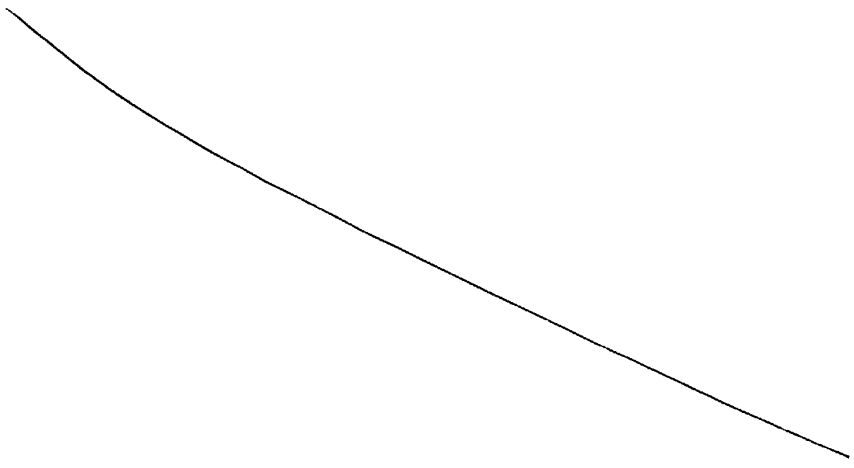
for each first lower dimensional vector, summing distances between the first lower dimensional vector and remaining first lower dimensional vectors;

if a lowest summed distance exceeds a predetermined threshold:

adding each first lower dimensional vector to a corresponding second lower dimensional vector to produce third lower dimensional vectors, wherein the third lower dimensional vectors represent fourth vectors with higher dimensionality than the generated vectors, and

for each third lower dimensional vector, summing distances between the third lower dimensional vector and remaining third lower dimensional vectors; and

selecting the generated vector corresponding to the first lower dimensional vector having the lowest summed distance or one of the fourth vectors corresponding to the third lower dimensional vector having the lowest summed distance as representative of the data set.



16. The method of Claim 15, further comprising:

outputting the generated vector or the one of the fourth vectors as the representative of the data set.

17. The method of Claim 15, wherein the reducing comprises:

choosing a dimension of the first lower dimensional vectors;

generating a plurality of random normalized vectors, the number of the random normalized vectors equaling the dimension of the first lower dimensional vectors; and

calculating a polynomial convolution between each of the generated vectors and each of the random normalized vectors to produce the first lower dimensional vectors.

18. The method of Claim 17, wherein the adding comprises:

generating another plurality of random normalized vectors, the number of the another random normalized vectors equaling the dimension of the first lower dimensional vectors; and

calculating a polynomial convolution between each of the generated vectors and each of the another random normalized vectors to produce the second lower dimensional vectors.

19. The method of Claim 15, wherein the selecting comprises:

identifying a dimension of the selected generated vector or a dimension of the selected one of the fourth vectors as a relaxed period.

20. The method of Claim 15, wherein the selecting comprises:

identifying the selected generated vector or the selected one of the fourth vectors as an average trend.

21. A method of identifying a representative trend in data, comprising:

a) partitioning the data into a plurality of vectors having a predetermined dimension;

b) reducing the plurality of vectors to a corresponding plurality of lower dimensional vectors;

c) for each one of the lower dimensional vectors, summing distances between the one lower dimensional vector and remaining lower dimensional vectors;

d) selecting one of the plurality of vectors corresponding to the lower dimensional vector having a lowest summed distance;

e) if the lowest summed distance exceeds a predetermined threshold:

adding each of the lower dimensional vectors with a corresponding one of another plurality of lower dimensional vectors to produce a third plurality of lower dimensional vectors, wherein the third plurality corresponds to another plurality of vectors having higher dimensionality than the plurality of vectors, and

repeating c) and d) for the another plurality of vectors and the corresponding third plurality of lower dimensional vectors; and

f) identifying the predetermined dimension of the selected one of the plurality of vectors as a period of the data and the selected one of the plurality of vectors as the representative trend of the data.

22. The method of Claim 21, further comprising:

outputting the period and the representative trend of the data.

23. A system, comprising:

means for partitioning a data set into a plurality of vectors;

means for reducing the plurality of vectors to a corresponding plurality of lower dimensional vectors;

for each one of the lower dimensional vectors, means for summing distances between the one lower dimensional vector and remaining lower dimensional vectors; and

means for selecting one of the plurality of vectors corresponding to the lower dimensional vector having a lowest summed distance as representative of the data set.

24. The system of Claim 23, further comprising:

means for outputting the one of the plurality of vectors as the representative of the data set.

25. A system, comprising:

a memory device having embodied therein data; and

a processor in communication with the memory device, the processor configured to

partition the data into a plurality of vectors,

reduce the plurality of vectors to a corresponding plurality of lower dimensional vectors,

for each one of the lower dimensional vectors, sum distances between the one lower dimensional vector and remaining lower dimensional vectors, and

select one of the plurality of vectors corresponding to the lower dimensional vector having a lowest summed distance as representative of the data.

26. The system of Claim 25, the processor further configured to:

output the one of the plurality of vectors as the representative of the data set.

27. A system, comprising:

means for generating vectors from a plurality of partitions of a data set;

means for reducing each generated vector to a first lower dimensional vector and a second lower dimensional vector;

means for adding each first lower dimensional vector and the corresponding second lower dimensional vector to produce third lower dimensional vectors, wherein the third lower dimensional vectors represent fourth vectors with higher dimensionality than the generated vectors;

for each third lower dimensional vector, means for summing distances between the third lower dimensional vector and remaining third lower dimensional vectors; and

means for selecting one of the fourth vectors corresponding to the third lower dimensional vector having a lowest summed distance as representative of the data set.

28. The system of Claim 27, further comprising:

means for outputting the one of the fourth vectors as the representative of the data set.

29. A system, comprising:

a memory device having embodied therein data; and

a processor in communication with the memory device, the processor configured to

generate vectors from a plurality of partitions of the data,

reduce each generated vector to a first lower dimensional vector and a second lower dimensional vector,

add each first lower dimensional vector and the corresponding second lower dimensional vector to produce third lower dimensional vectors, wherein the third lower dimensional vectors represent fourth vectors with higher dimensionality than the generated vectors,

for each third lower dimensional vector, sum distances between the third lower dimensional vector and remaining third lower dimensional vectors, and

select one of the fourth vectors corresponding to the third lower dimensional vector having a lowest summed distance as representative of the data.

30. The system of Claim 29, the processor further configured to:

output the one of the fourth vectors as the representative of the data.

31. A machine-readable medium containing program instructions for execution on a processor, which when executed by the processor, cause the processor to:

generate vectors from a plurality of partitions of a data set,

reduce each generated vector to a lower dimensional vector,

for each lower dimensional vector, sum distances between the lower dimensional vector and remaining lower dimensional vectors, and

select the generated vector corresponding to the lower dimensional vector having a lowest summed distance as representative of the data set.

32. The machine-readable medium of Claim 31, wherein the instructions further cause the processor to:

output the generated vector as the representative of the data set.

33. The machine-readable medium of Claim 31, wherein the instructions further cause the processor to:

choose a dimension of the lower dimensional vectors;

generate a plurality of random normalized vectors, the number of the random normalized vectors equaling the dimension of the lower dimensional vectors; and

calculate a dot product between each of the generated vectors and each of the random normalized vectors to produce the lower dimensional vectors.

34. The machine-readable medium of Claim 31, wherein the instructions further cause the processor to:

choose a dimension of the lower dimensional vectors;

generate a plurality of random normalized vectors, the number of the random normalized vectors equaling the dimension of the lower dimensional vectors; and

calculate a polynomial convolution between each of the generated vectors and each of the random normalized vectors to produce the lower dimensional vectors.

35. The machine-readable medium of Claim 34, wherein the instructions further cause the processor to:

generate another plurality of random normalized vectors, the number of the another random normalized vectors equaling the dimension of the lower dimensional vectors; and

calculate a polynomial convolution between each of the generated vectors and each of the another random normalized vectors to produce second lower dimensional vectors.

36. The machine-readable medium of Claim 35, wherein the instructions further cause the processor to:

add each lower dimensional vector with the corresponding second lower dimensional vector to produce third lower dimensional vectors, the third lower dimensional vectors representing fourth vectors with higher dimensionality than the generated vectors.

37. The machine-readable medium of Claim 31, wherein the instructions further cause the processor to:

identify a dimension of the selected generated vector as a relaxed period.

38. The machine-readable medium of Claim 31, wherein the instructions further cause the processor to:

identify the selected generated vector as an average trend.

39. A machine-readable medium containing program instructions for execution on a processor, which when executed by the processor, cause the processor to:

generate vectors from a plurality of partitions of a data set,

reduce each generated vector to a first lower dimensional vector and a second lower dimensional vector,

add each first lower dimensional vector and the corresponding second lower dimensional vector to produce third lower dimensional vectors, wherein the third lower dimensional vectors represent fourth vectors with higher dimensionality than the generated vectors,

for each third lower dimensional vector, sum distances between the third lower dimensional vector and remaining third lower dimensional vectors, and

select one of the fourth vectors corresponding to the third lower dimensional vector having a lowest summed distance as representative of the data set.

40. The machine-readable medium of Claim 39, wherein the instructions further cause the processor to:

output the one of the fourth vectors as the representative of the data set.